Journal of Comprehensive Surgery

Case Report

DOI: 10.51271/JOCS-0055

Unexpected motor weakness after ultrasound-guided retrolaminar block: a case report

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Cite this article as: Peker K. Unexpected motor weakness after ultrasound-guided retrolaminar block: a case report. *J Compr Surg.* 2025;3(2):40-41.

Received: 14.02.2025 ◆ **Accepted**: 25.03.2025 ◆ **Published**: 08.05.2025

ABSTRACT

Retrolaminar block (RLB) is a new and simple approach of paravertebral block with laminar technique. Retrolaminar block is used for pain management of breast surgery, rib fractures and lumbar trauma. However there is not any complication of RLB in the literature. In the present manuscript, we report a case of unexpected motor weakness after ultrasound-guided Retrolaminar block of patient who underwent lumbar disc surgery. After the uneventful general anesthesia, the patient had hypoesthesia as well as loss of muscle strength. The imaging methods were evaluated as normal. The patient was followed up at 4 hour intervals. The motor weakness of the patient completely resolved at the postoperative 28th hour. To our knowledge this is the first report of motor weakness related to the RLB. Retrolaminar block may cause transient muscle weakness. A careful physical examination and follow-up will provide clear information like in this clinical situation.

Keywords: Retrolaminar block, motor weakness, ultrasound

INTRODUCTION

Paravertebral blocks are usually performed for postoperative analgesia. Retrolaminar block (RLB) is a new and simple approach of paravertebral block with laminar technique.[1] When the needle tip contacted to the lamina, local anesthetic is injectated over the vertebral lamina deep to the paraspinous muscles.[1] Local anesthetic spreads paravertebral space, neural foramina and intercostal space and so the spinal nerves are blocked.[1] RLB is used for pain management of breast surgery, rib fractures and lumbar trauma.[2,3] However there is not any complication of RLB in the literature. We performed this truncal block for postoperative analgesia for patient undergoing lumbar spinal surgery. And we report a case of unanticipated motor weakness after ultrasound-guided RLB. To our knowledge this is the first report of motor weakness related to the RLB.

CASE

A 63 years old man was scheduled for lumbar disc surgery due to the lumbar disc herniation. The patient was an ASA class II with regulated hypertension. In our patient nerve block room, oxygen saturation (SPO_2), noninvasive blood pressure, ECG monitoring were performed. After taken written inform form, the single-shot retrolaminar block was performed at the level of L3 lamina. The skin sterilized, then the level of the lamina was located by ultrasound-guided approach from lateral to medial in supine position with 7-12 MHz convex probe at the preoperative waiting area. The needle was inserted in plane technique, contacted to the lamina and 20 ml 0.25% bupivacaine was injectated between the lamina and the deep paraspinous muscles (**Figure A**). The spread of local anesthetic was seen (**Figure B**). Then the patient was taken to the operation theatre. Bispectral Index (BIS) monitoring was performed in addition to standard monitoring. During induction, patient received 2 mg/kg propofol, 1 µg/kg fentanyl and 0.6 mg/kg rocuronium for muscle relaxation. After intubation sevoflurane 2-3% in 50% O_2-air mixture was given for maintenance of anesthesia. The patient was extubated after an uneventful surgery. The patient received 1000 mg intravenous acetaminophen for addition of postoperative analgesia. When adequate spontaneous breathing is achieved, the patient was extubated and transferred to the ward. The evaluating of the pain at determined intervals with Visual Analogue Scale (VAS) scores of resting/dynamic was made. The VAS scores of the patient was below 4/10 at all postoperative time intervals. However, when the patient was examined for pain at the 4th postoperative hour, patients' right hip flexion was 2/5 and right knee extension was 4/5 according to the manual muscle testing. And the patient had hypoesthesia as well as loss of muscle strength. Upon detection of motor deficits, computed tomography was performed for rulling out primary neurologic etiologies. The imaging methods were evaluated as normal. The patient was followed up at 4-hour intervals. Examination findings remained the same until postoperative 16th hour and the patient failed the straight leg lifting test. At the postoperative 20th hour, the patient's motor sensation began to recur, raising the leg slightly in the leg lift test. The motor weakness of the patient completely recovered

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at the postoperative 28th hour. The patient was discharged at postoperative 3rd day without any compliant.

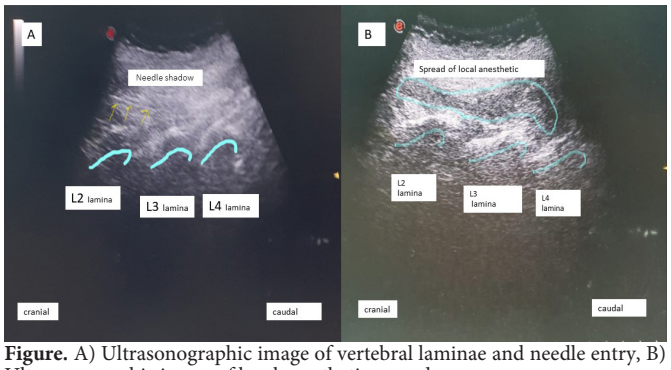

Figure. A) Ultrasonographic image of vertebral laminae and needle entry, B) Ultrasonographic image of local anesthetic spread

DISCUSSION

Providing good analgesia in the postoperative period in patients who have undergone lumbar spine surgery reduces the morbidity of the patients, provides early mobilization and early discharge.[4] In recent years, regional techniques have been frequently used to provide analgesia, especially to avoid adverse effects such as respiratory depression, nausea, vomiting, constipation and addiction due to opioids.[4] Retrolaminar block is a facial plane block used for postoperative analgesia in lumbar spine surgery.[5] We did not find any report related to the motor weakness, muscle weakness or reflex disorder due to RLB. The present case is the first in the literature. In our case the physical examination of weakness of muscles confirmed the spinal nerve infiltration of local anesthetic through the neuraxial space and lumbosacral plexus. So, we thouht that the cause of the motor weakness of the present patient is due to the RLB. The computarized tomography of the patient after the weakness complaint was normal. It was seen that his complaint was reversible (His complaints improved over time at intervals of examining the motor weakness). The spread of local anesthetic through the paravertebral space and blockage of the spinal nerves is the primary wanted effect of the retrolaminar block. However, the anatomic approach of the RLB was the more nearer to the neural foramina than the other paraspinal blocks. So, the spread of the local anesthetic was much more to the neural foramina than intercostal spread. This thought us, the local anesthetic distribution was not only paravertebral space but also epidural space. According to the physical examination of the patient (motor weakness during the straight leg lift testing and the hypoestesia of the internal space of the right leg), the distribution of the local anesthetic was to the epidural space of the L2 vertebrae.

In the literature, we see similar muscle strength loss in the lower extremity only in the erector spinae plane block, which is a block similar to the retrolaminar block (paravertebral area block). In patients who underwent ESP block, conditions such as motor muscle weakness and joint reflex disorders were encountered in the literature, especially in patients who underwent continuous block.[6-8] One of them was knee and ankle reflex weakness that developed in a young patient who had undergone cesarean section and underwent bilateral thoracic ESP.[7] The authors concluded without excluding a possible epidural extension, the weakness of reflexes was due to lumbosacral extension of the local anesthetic. Unlike the authors who applied a single injection, unilateral motor weakness was observed in another patient who underwent ESP by inserting a catheter.[8] These authors, on the other hand, thought that it was due to the neuraxial spread of the local anesthetic because of the motor weakness.

CONCLUSION

Motor weakness seen after a RLB application for post-operative analgesia, especially after spinal surgery, is a condition that can irritate both the doctor and the patient. However, a careful physical examination and follow-up with imaging methods will provide clear information about the current clinical situation.

ETHICAL DECLARATIONS

Informed Consent

The patient signed and free and informed consent form.

Referee Evaluation Process

Externally peer-reviewed.

Conflict of Interest Statement

The authors have no conflicts of interest to declare.

Financial Disclosure

The authors declared that this study has received no financial support.

Author Contributions

All of the authors declare that they have all participated in the design, execution, and analysis of the paper, and that they have approved the final version.

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